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Ans

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/856,150 | 08/03/2001 | Sung Tae Yang | P66658USO | 9223 |

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| EXAMINER |
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PERILLA, JASON M

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| ART UNIT | PAPER NUMBER |
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2634

DATE MAILED: 07/22/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/856,150

Applicant(s)

YANG ET AL

Examiner

Jason M Perilla

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply.

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-8 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Claims 1-8 are pending in the instant application.

Priority

2. A copy of the certified copy of the priority document is present in the file.

Drawings

3. The Examiner notes that an original formal copy of the drawings may be submitted to provide better illustration of the invention although it is not required.

Claim Objections

4. In claim 6, line 11 should begin as step (c) rather than step (b).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over Gitlin et al (US 5442625; hereafter "Gitlin") in view of Bi (US 5623485).

Regarding claim 1, Gitlin discloses in a code division multiple access transmit modulator (abstract) comprising a channel encoder (fig. 1, ref. 101) for convolutionally encoding input signal from a vocoder (USER SOURCE BITS) with symbol repetition (col. 4, lines 1-10) and interleaving (fig. 1, ref. 102) the encoded signal; a channel modulator (fig. 1, ref. 104) for combining the output signal from said channel encoder and an orthogonal code signal (fig. 1, ref. C1) distinguishing one from another traffic

channel; a pair of pseudo noise (PN) combiners (fig. 1, refs. 105 and 106), each for combining the output signal of said channel modulator and a respective one of a pair of pseudo noise signals which have a predetermined offset in phase (col. 2, lines 25-30); and an analog signal modulator (fig. 1, refs. 108 and 109) for converting the output signals of said pseudo noise (PN) combiners to an RF signal, an apparatus for obtaining multiple subchannels within a traffic channel (abstract), comprising: a plurality of subchannel encoders (fig. 2, refs. 201, 221, and 241) substituted for said channel encoder, each for convolutionally encoding with symbol repetition and interleaving input data from a respective one of a plurality of subchannels, the data rate of each of the plurality of subchannels being lower than the encodable data rate of the traffic channel by said channel encoder (col. 3, lines 15-30); a plurality of subchannel modulators (fig. 2, refs. 204, 224, and 244), each for combining an output signal from a respective one of said plurality of subchannel encoders and a respective orthogonal code signal (C1, C2, ... CM) distinguishing one from another subchannel, all subchannels being accommodated in a single traffic channel; and a subchannel summer (fig. 2, ref. 254) for summing output signals of said plurality of the subchannel modulators and providing the summed signal to said channel modulator (fig. 1, refs. 108 and 109). Gitlin does not disclose a pair of lowpass filters, each for filtering a respective output signal of said plurality of PN combiners and flattening the power level of the output signal. However, Bi does teach a pair of lowpass filters (fig. 2, refs. 154 and 164), each for filtering a respective output signal of said plurality of PN combiners (fig. 2, refs. 150 and 160) and flattening the power level of the output signal (col. 7, lines 60-63) in a CDMA system

(abstract). Bi teaches that the filters perform pulse shaping and band limiting. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize the low pass filters as taught by Bi in the apparatus of Gitlin because it would advantageously band limit the output signal to allow for only the transmission of the appropriate signal.

Regarding claim 2, Gitlin in view of Bi disclose the limitations of claim 1 as applied above. Further, Gitlin discloses that the data rate of each of the plurality of subchannels is N times lower than a predetermined data rate of input signal that is inputted to said channel encoder, N being the number of said subchannel encoders (col. 3, lines 16-26).

Regarding claim 3, Gitlin in view of Bi disclose the limitations of claim 1 as applied above. Further, Gitlin discloses that the data rate of said orthogonal code signal defining a subchannel is equal to a predetermined data rate of the input signal that is inputted to said channel modulator (col. 4, lines 20-30).

Regarding claim 6, Gitlin discloses by figure 2 a method of obtaining multiple channels within a traffic channel in a code division multiple access transmit modulator (abstract), comprising the steps of: (a) encoding a plurality of input signals by using convolutional encoding (201, 221, and 241), symbol repetition (col. 4, lines 1-10), and interleaving (202, 222, 242) independently; (b) multiplying each of a plurality of the encoded signals by a first respective orthogonal code signal (C1, C2, ... CM) distinguishing one from another subchannel (204, 224, and 244), so as to provide a plurality of resultant subchannelized input signals; (c) mixing the plurality of

subchannelized input signals into a resultant combined signal (254); (e) multiplying (205 and 206) the channelized signal by a PN code (AI and AQ) which is predetermined-offset in phase (col. 2, lines 25-30), so as to provide a PN code modulated signal; and (g) converting the filtered signal into an radio frequency signal (208 and 209). Gitlin does not disclose the method including the step of (f) filtering the PN code modulated signal and flattening the power level in the frequency band. However, Bi does teach a pair of lowpass filters (fig. 2, refs. 154 and 164), each for filtering a respective output signal of said plurality of PN combiners (fig. 2, refs. 150 and 160) and flattening the power level of the output signal (col. 7, lines 60-63) in a CDMA system (abstract). Bi teaches that the filters perform pulse shaping and band limiting. Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to utilize the low pass filters as taught by Bi in the method of Gitlin because it would advantageously band limit the output signal to allow for only the transmission of the appropriate signal.

Further regarding claim 6, Gitlin in view of Bi do not disclose (d) multiplying the *combined signal* by a second orthogonal code signal distinguishing one from another traffic channel, so as to provide a resultant channelized signal. However, Gitlin does disclose multiplying the *plurality of input signals* by a second orthogonal code signal (fig. 2, refs. 203, 223, 243) distinguishing one from another traffic channel. Further, Gitlin shows in figure 4 that the single data stream is divided into a plurality of data streams after multiplication by a second orthogonal code signal distinguishing one from another traffic channel. It would have been obvious to one having ordinary skill in the art at the

time which the invention was made to multiply the *combined signal* by a second orthogonal code signal (walsh) distinguishing one from another traffic channel because fewer components would be required in the system.

Regarding claim 7, Gitlin in view of Bi disclose the limitations of claim 6 as applied above. Further Gitlin discloses that the data rate of the input signal is N times lower than the data rate defined for the resultant combined signal, N being the number of said plurality of input data (col. 3, lines 16-26).

Regarding claim 8, Gitlin in view of Bi disclose the limitations of claim 6 as applied above. Further Gitlin discloses that in the embodiment of figure 4, a symbol repeater is utilized so that the chip rate is constant (col. 4, lines 1-10). Therefore, it is obvious, as applied above in the rejection of claim 6, that encoding (201, 221, and 241), symbol repetition (col. 4, lines 1-10), and interleaving (202, 222, 242) are performed independently in the embodiment of figure 2. Thereby, the bit rate of the first orthogonal code signal is equal to the data rate defined for the resultant combined signal (col. 4, lines 20-30).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gitlin in view of Bi as applied to claim 1 above, and further in view of Odenwalder et al (US 6298051; hereafter "Odenwalder").

Regarding claim 5, Gitlin in view of Bi disclose the limitation of claim 1 as applied above. Gitlin in view of Bi do not disclose that the subchannel summer reduces the energy of the subchannel data of each or all of the plurality of subchannels. However, Odenwalder teaches a high data rate CDMA system having multiple subchannels

wherein the gain of each of the subchannels is modified as they are combined (fig. 3, refs. 108; col. 4, lines 50-65). Odenwalder teaches that the gain can be properly adjusted for each subchannels so that interference is reduced and total transmit capacity is increased. Therefore, it would have been known to one having ordinary skill in the art at the time which the invention was made to utilize a subchannel summer wherein the energy of the subchannels may be gain adjusted (reduced) as taught by Odenwalder in the apparatus of Gitlin in view of Bi because it could mitigate interference and increase transmit capacity.

Allowable Subject Matter

8. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art not relied upon above is further cited to show the state of the art with respect to variable rate CDMA systems.

U.S. Pat. No. 5737326 to I et al.

U.S. Pat. No. 6034971 to Love et al.

U.S. Pat. No. 6064663 to Honkasalo et al.

U.S. Pat. No. 6130884 to Sato.

U.S. Pat. No. 5619526 to Kim et al.

U.S. Pat. No. 5881093 to Wang et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M Perilla whose telephone number is (703) 305-0374. The examiner can normally be reached on M-F 8-5 EST.

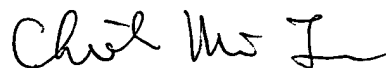
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason M Perilla
July 12, 2004

jmp



CHIEH M. FAN
PRIMARY EXAMINER